

Anurans of the Urucu Petrol Basin, municipality of Coari, State of Amazonas, northern Brazil

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ABSTRACT: We present the first species amphibian list for municipality of Coari, state of Amazonas, Brazil. The list was drawn up as a result of data obtained from specimens deposited in the Herpetological Collection of the Museu Paraense Emílio Goeldi and inventories conducted in the Urucu Petrol Base, in 2003-2004 and 2007-2009. Sampling methods included pitfall traps with drift fences and time constrained searches. We considered the data collected by other researchers, incidental encounters and records of dead individual on the road. Fifty four species were recorded. *Rhinella* gr. *margaritifera* (n= 68), *Adenomera* gr. *marmorata* (n= 59), and *Osteocephalus lepriurii* (n= 20) were the most collected, while ten species were less collected. Compared with other studies in eastern Amazonia, the region of Urucu presented a large number of anurans. Nonetheless, it's not possible to confirm this because the data collected were not standardized among studies. However, further studies by, increasing the sampling effort, could prove this area to be richer in anurans than that observed so far.

INTRODUCTION

The Amazon has a great diversity of species of amphibians, mainly due to the hot and humid climate, coupled with the availability of large bodies of water, conditions that favor the occurrence of different forms and lifestyles (Duellman 1999; Galatti *et al.* 2007). Ávila-Pires *et al.* (2007) recorded for the Brazilian Amazon, 221 species of Anura, nine species of Gymnophiona and two species of Caudata, which represent 73% of the amphibian species occurring throughout the Amazon biome. However, this number is underestimated due to problems in various taxonomic groups and to the recently described new species, in addition to the new records of some species for Brazilian Amazonia (Ávila-Pires *et al.* 2007; Peloso and Sturaro 2008; Maciel *et al.* 2009; Peloso *et al.* 2009; Sturaro *et al.* 2010; Maciel and Hoogmoed 2011a, b; Hoogmoed and Ávila-Pires 2011; Hoogmoed *et al.* 2011).

Azevedo-Ramos and Galatti (2002) presented a compilation of data on the amphibian fauna obtained from 28 surveys conducted in the Brazilian Amazon and highlighted the main gaps in knowledge for this region. The relevant studies conducted in central and western Amazonia include the studies of Heyer (1977) in Purus and Madeira rivers, Zimmerman and Rodrigues (1990) and Hero (1990) in Manaus, and Gascon (1996) in the region of Juruá River. Recently, a few studies were carried out at the Mamirauá Reserve, in Tefé (Bannerman 2001); in Lower Purus and Solimões rivers (Gordo 2003); in the Jaú National Park, municipalities of Novo Airão and Barcelos (Neckel-Oliveira and Gordo 2004); and in the Ducke Reserve, Manaus (Lima *et al.* 2006; Menin *et al.* 2008). In the Upper Urucu River, the study of Gascon and Pereira (1993) includes a list of regional herpetofauna, with 33 species of anurans. Azevedo-Ramos and Galatti

(2002), compiling data from Gascon and Pereira (1993) and Hoogmoed and Ávila-Pires (personal communication) reported the presence of 53 species of anurans in the region of Urucu, without presenting a list of species names.

Located south of the Amazon River, in the municipality of Coari, state of Amazonas, Brazil, the Urucu Petrol Basin presents a matrix of preserved tropical rainforest, with some areas destined for the exploration of oil and natural gas, and the presence of numerous water wells and artificial clearings (Lima *et al.* 2008; Prudente *et al.* 2010). Herein, we present a list of anuran species for this region, based on fieldwork and collection data.

MATERIAL AND METHODS

Study area

The study was conducted at the Urucu Petrol Basin, an area comprising over 50 km of road networks (4°45'-4°56'S, 65°00'-65°24'W; see the Figure 1B and methods). Observations were collected in the Base de Operações Geólogo Pedro de Moura (BOGPM), municipality of Coari, Amazonas, Brazil (Figure 1A). The climate has a seasonal cycle of precipitation distribution (annual mean of 2239 mm), alternating between a dry season (33.9% of rainfall) from June to November and a rainy season (66.1% of rainfall) from December to May, and an average annual temperature ranging from 25.2°C to 26.2°C (Lima *et al.* 2008).

The Urucu River Basin is located in the interfluvium between Juruá and Purus rivers, in a large area of lowland, with many wetlands interspersed by stretches of land. The hydrographic network is formed by a large number of rivers, igarapés, streams and springs (Lima *et al.* 2008). The soil is supplied by sediments from the Solimões formation, with the presence of two associations of predominant soil

classes (Ribeiro *et al.* 2008). They are characterized by the presence of mineral soils with little organic matter and low nutrient retention, with high aluminum saturation and clay texture (Ribeiro *et al.* 2008). The region is primarily composed of upland and dense terra-firme forest (Dense Ombrophilous Terra-Firme Forest), representing 80-85% of the plant cover, and floodplain forest (Floodplain Ombrophilous Forest) (Amaral *et al.* 2008).

Data Collection

To compile the list of species, we used data from expeditions made in 2003-2004 and 2007-2009, besides material from previous inventories deposited in the Coleção Herpetológica Osvaldo Rodrigues da Cunha, Museu Paraense Emílio Goeldi, Belém, Pará, Brazil (MPEG).

The collecting and transportation of the material were made under proper authorization by IBAMA (process 02018.005457/01-36)

Seven expeditions were conducted, totaling 81 days distributed amongst the following periods: July 2003, November 2004, January and April 2007, April to May 2008 and August 2008, and June 2009. We sampled 42 areas (transect of 500 m), including disturbed clearings, and natural clearings and forested areas, spread over 50 km of road network, which connect the Base to Evandro Port (Figure 1B).

We used two collection methods: Pitfall Traps (PFT) and Time Constrained Search (TCS) (Maschio *et al.* 2009). The PFT were installed only in one area, remaining open for 11 days of fieldwork (only one expedition), while the

TCS was performed in all areas over the 81 collection days. Specimens recorded through Incidental Encounters (IE), run over on roads (Road) and collected by third parties (CTP) were also considered.

The combined use of these methods aided in the compilation of representative sample for the region, considering that they are complementary methods and access different faunas (Ávila-Pires *et al.* 2007; Maschio *et al.* 2009). All material collected is deposited in the Herpetological collection of MPEG (Appendix).

RESULTS AND DISCUSSION

We recorded 54 species of anurans ($n = 396$) from 21 genera and 11 families (Table 1).

Among the methods used in this study, the TCS had the highest number of records of specimens ($n = 202$; 34 species, including 12 exclusive to this method), followed by IE ($n = 40$; 14 species, including 2 exclusive to this method) PFT ($n = 16$; 5 species, of which none were exclusive), CTP ($n = 8$) and Road ($n = 4$; 4 species, with only one exclusive to this method). These results corroborate the studies in the Amazon, which indicate the joint use of standard (employed by the team, such as PFT and TCS) and nonstandard (CTP and IE) methods in inventories of herpetofauna performed in forested environments (Martins and Oliveira 1998; Ávila-Pires *et al.* 2007; Maschio *et al.* 2009).

The Herpetological Collection of MPEG contributed 126 records of 34 species of amphibians, 14 of which were exclusive to this data, not having been recorded during the field activities of this investigation (Table 1). This scientific collection data was an important source of information for complementing this study, helping to expand the knowledge of the anuran fauna for the region.

The number of amphibians run over was low ($n = 4$) compared to snakes which, in a previous study in Urucu (Prudente *et al.* 2010), had a high death rate from being run over. However, collection on roads was responsible for the only record of *Phyllomedusa tarsius*. It is likely that this number is underestimated since amphibians are much smaller than snakes, which makes it more difficult to be killed by cars on the roads.

For the identification of some species recorded in the region of Urucu more detailed and specific additional studies will be necessary. Among the taxa that have taxonomic problems are the following genera and species groups: *Allobates*, *Dendropsophus*, *Adenomera*, *Pristimantis* and *Rhinella* gr. *margaritifera* (Angulo *et al.* 2003; Grant *et al.* 2006; Fouquet *et al.* 2007; Angulo and Reichle 2008; Moravec *et al.* 2008; Padial and De la Riva 2009; Barrios-Amorós and Santos 2009).

Rhinella gr. *margaritifera*, *Adenomera* gr. *marmorata*, *Osteocephalus leprieurii* and *Ameerega trivittata* were the most collected species and 33% (18 spp) had only one record (Table 1).

The oviposition and larval development of *Rhinella* gr. *margaritifera* occurs in lentic water bodies such as igarapés or along the margins of great rivers (Hödl 1990). *Rhinella magnussoni* Lima *et al.* 2007 used a pool of water that formed on fallen tree trunks and *Rhinella castaneotica* (Caldwell 1991) was observed in empty Brazilian nut fruit capsules. This group is widely distributed in South

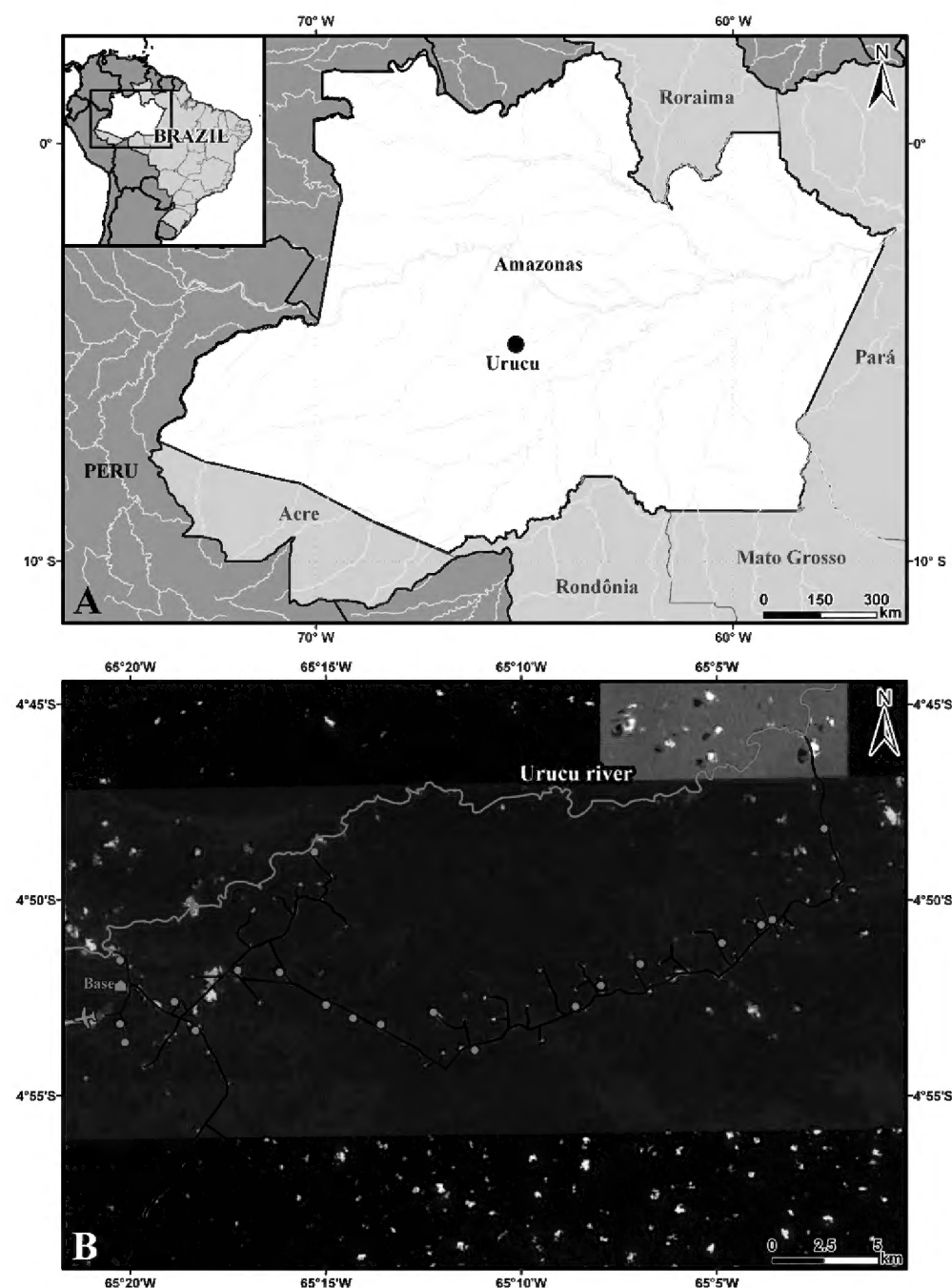


FIGURE 1. (A) Location of the study area; (B) the Base de Operações Geólogo Pedro de Moura (BOGPM), Municipality of Coari, State of Amazonas, Brazil. Red circles = samples areas.

TABLE 1. List of anurans collected at the Base de Operações Geólogo Pedro de Moura (BOGPM), Municipality of Coari, state of Amazonas, Brazil, collected in 2003-2009. Pitfall Traps (PFT), Time Constrained Search (TCS), Incidental Encounters (IE), and collected by third parties (CTP).

| FAMILY | SPECIES | TCS | PFT | IE | CTP | ROAD | COLLECTION MPEG | TOTAL |
|---------------------|--------------------------------------------------------------------------------|-----|-----|----|-----|------|--------------------|-------|
| Aromobatidae | <i>Allobates femoralis</i> (Boulenger, 1884 “1883”) | 3 | | | | | 6 | 9 |
| | <i>Allobates</i> gr. <i>trilineatus</i> | 8 | 1 | 3 | 1 | | 4 | 17 |
| Bufonidae | <i>Dendrophryniscus bokermanni</i> Izecksohn, 1994 “1993” | 5 | | | | | | 5 |
| | <i>Rhaebo guttatus</i> (Schneider, 1799) | | | 1 | 1 | | 1 | 3 |
| | <i>Rhinella</i> gr. <i>margaritifera</i> (Laurenti, 1768) | 28 | 6 | 5 | 1 | | 28 | 68 |
| | <i>Rhinella marina</i> (Linnaeus, 1758) | 6 | 2 | 5 | | 1 | 2 | 16 |
| Centrolenidae | <i>Teratohyla midas</i> (Lynch and Duellman, 1973) | | | 1 | | | | 1 |
| Dendrobatidae | <i>Ameerega hahneli</i> (Boulenger, 1884 “1883”) | | | | | | 1 | 1 |
| | <i>Ameerega trivittata</i> (Spix, 1824) | 15 | | 1 | | | 3 | 19 |
| | <i>Ranitomeya toraro</i> Brown, Caldwell, Twomey, Melo-Sampaio and Souza, 2011 | 12 | | 1 | 1 | | 1 | 15 |
| Eleutherodactylidae | <i>Phyzelaphryne miriamae</i> Heyer, 1977 | | | | | | 2 | 2 |
| Hylidae | <i>Dendropsophus marmoratus</i> (Laurenti, 1768) | | | | | | 2 | 2 |
| | <i>Dendropsophus minutus</i> (Peters, 1872) | | | | | | 1 | 1 |
| | <i>Dendropsophus parviceps</i> (Boulenger, 1882) | 1 | | | | | | 1 |
| | <i>Dendropsophus rhodopeplus</i> (Günther, 1858) | 6 | | | | | | 6 |
| | <i>Dendropsophus sarayacuensis</i> (Shreve, 1935) | | | | | | 2 | 2 |
| | <i>Dendropsophus</i> sp. | 10 | | | | | | 10 |
| | <i>Hypsiboas boans</i> (Linnaeus, 1758) | | | 1 | | | | 1 |
| | <i>Hypsiboas calcaratus</i> (Troschel, 1848) | | | | | | 1 | 1 |
| | <i>Hypsiboas fasciatus</i> (Günther, 1858) | 7 | | | | | 5 | 12 |
| | <i>Hypsiboas geographicus</i> (Spix, 1824) | 3 | | | | | 2 | 5 |
| | <i>Hypsiboas lanciformis</i> Cope, 1871 “1870” | 6 | | 1 | | 1 | 1 | 9 |
| | <i>Hypsiboas nympha</i> Faivovich, Moravec, Cisneros-Heredia and Köhler, 2006 | | | | 2 | | | 2 |
| | <i>Osteocephalus buckleyi</i> (Boulenger, 1882) | 4 | | | | | 2 | 6 |
| | <i>Osteocephalus leprieurii</i> (Duméril and Bibron, 1841) | 19 | | | 1 | | | 20 |
| | <i>Osteocephalus oophagus</i> Jungfer and Schiesari, 1995 | 4 | | 1 | | | | 5 |
| | <i>Osteocephalus taurinus</i> Steindachner, 1862 | 7 | | | | | 1 | 8 |
| | <i>Phyllomedusa atelopoides</i> Duellman, Cadle and Cannatella, 1988 | 1 | | | | | | 1 |
| | <i>Phyllomedusa tarsius</i> (Cope, 1868) | | | | | 1 | | 1 |
| | <i>Phyllomedusa tomopterna</i> (Cope, 1868) | 5 | | | | 1 | 1 | 7 |
| | <i>Phyllomedusa vaillantii</i> Boulenger, 1882 | 4 | | | | | 1 | 5 |
| | <i>Scinax garbei</i> (Miranda-Ribeiro, 1926) | | | | | | 1 | 1 |
| | <i>Scinax</i> cf. <i>x-signatus</i> (Spix, 1824) | 4 | | 4 | | | 10 | 18 |
| | <i>Trachycephalus coriaceus</i> (Peters, 1867) | | | | | | 1 | 1 |
| Leiuperidae | <i>Engystomops freibergeri</i> (Donoso-Barros, 1969) | 2 | 2 | | | | 9 | 13 |
| Leptodactylidae | <i>Adenomera</i> gr. <i>marmorata</i> | 16 | 5 | 14 | | | 24 | 59 |
| | <i>Leptodactylus mystaceus</i> (Spix, 1824) | | | | | | 2 | 2 |
| | <i>Leptodactylus pentadactylus</i> (Laurenti, 1768) | 7 | | | | | | 7 |
| | <i>Leptodactylus petersii</i> (Steindachner, 1864) | | | | | | 1 | 1 |
| | <i>Leptodactylus podicipinus</i> (Cope, 1862) | 2 | | | | | | 2 |
| | <i>Leptodactylus rhodomystax</i> Boulenger, 1884 “1883” | | | | | | 1 | 1 |
| | <i>Leptodactylus stenodema</i> Jiménez de la Espada, 1875 | | | | | | 1 | 1 |
| | <i>Lithodytes lineatus</i> (Schneider, 1799) | 1 | | | | | | 1 |
| | <i>Chiasmocleis avilapiresae</i> Peloso and Sturaro, 2008 | 1 | | | | | 1 | 2 |
| | <i>Chiasmocleis bassleri</i> Dunn, 1949 | 1 | | 1 | | | 2 | 4 |
| Microhylidae | <i>Chiasmocleis jimi</i> Caramaschi and Cruz, 2001 | 1 | | | | | | 1 |
| | <i>Ctenophryne geayi</i> Mocquard, 1904 | | | | | | 1 | 1 |
| Pipidae | <i>Pipa pipa</i> (Linnaeus, 1758) | | | | 1 | | | 1 |
| Strabomantidae | <i>Oreobates quixensis</i> Jiménez de la Espada, 1872 | 1 | | | | | | 1 |
| | <i>Pristimantis reichlei</i> Padial and De la Riva, 2009 | 8 | | | | | 2 | 10 |
| | <i>Pristimantis</i> sp. 1 | | | | | | 3 | 3 |
| | <i>Pristimantis</i> sp. 2 | 1 | | | | | | 1 |
| | <i>Pristimantis</i> sp. 3 | 3 | | | | | | 3 |
| | <i>Pristimantis</i> sp. 4 | | | 1 | | | | 1 |
| TOTAL | | 202 | 16 | 40 | 8 | 4 | 126 | 396 |

America and has both diurnal and nocturnal habits (Frost 2011; Galatti et al. 2007). In the region of Urucu, *R. gr. margaritifera* inhabits the litter of forested areas, although it can also be found in clearings which are very common in this region. This species was collected by both TCS and by PFT techniques.

Adenomera gr. marmorata (= *Adenomera* sp. sensu Frost et al. 2006), the second most common taxon in Urucu, was visualized active during the day, on the forest floor litter and in disturbed areas, and was collected both by TCS (n = 16) and by PFT (n = 5), as well as being recorded by IE (n = 14) and being present in the collection (n = 24), where there was no information about its habitat (Table 1). *Osteocephalus leprieurii* was only recorded by TCS, and was observed in both primary forest and in areas of natural and anthropic clearings, as noted by La Marca et al. (2008). *Ameerega trivittata* was recorded by TCS (n = 15), IE (n = 1) and CTP (n = 3) on leaf litter of forested areas and clearings, with some individuals near water bodies.

Phyllomedusa atelopoides is among the less common species recorded in Urucu, and the only specimen found was recorded in the leaf litter of primary forest (Peloso et al. 2009). This species, found on both the ground and in low vegetation, deposits its eggs on leaves and the tadpoles develop in temporary ponds (Angulo et al. 2004).

According to Frost (2011) only two species of *Oreobates* occur in the western region of the Brazilian Amazon: *O. heterodactylus* and *O. quixensis*. *Oreobates quixensis* occurs in the Upper Amazon Basin in Colombia, Ecuador, Peru, Bolivia (Department of Pando) and Brazil (Acre) (Souza 2009; Frost 2011). The record of this species in Urucu represents the first for the State of Amazonas, and the eastern end of the distribution of this species. *Oreobates quixensis* was found foraging at night on vegetation, in a forest area.

Hypsiboas nympha occurs to the west of the Amazon (Ecuador, Colombia and Peru), below 600m of altitude, preferably in primary forest (Faivovich et al. 2006). This is the first record of this species in Brazil, extending the current distribution by about 500 km from its most eastern locality (Letícia, Amazonas, Colombia).

Excluding those species that are identified only to the genus level, in this study and in the list produced by Gascon and Pereira (1993), it is possible to increase the number of anurans in the region of Urucu by 25 species (*Dendrophryniscus bockermanni*, *Teratohyla midas*, *Phyzelaphryne miriamae*, *Dendropsophus marmoratus*, *Dendropsophus minutus*, *Dendropsophus rhodopeplus*, *Dendropsophus sarayacuensis*, *Osteocephalus buckleyi*, *Osteocephalus leprieurii*, *Osteocephalus oophagus*, *Phyllomedusa atelopoides*, *Phyllomedusa tomopterna*, *Phyllomedusa tarsius*, *Scinax garbei*, *Trachycephalus coriaceus*, *Leptodactylus lineatus*, *Leptodactylus mystaceus*, *Leptodactylus petersii*, *Leptodactylus podicipinus*, *Leptodactylus stenoderma*, *Chiasmocleis avilapiresae*, *Chiasmocleis jimi*, *Chiasmocleis bassleri*, *Ctenophryne geayi* and *Oreobates quixensis*). Three species that were not recorded in this study are found in the list presented by Gascon and Pereira (1993) for the region of Urucu: *Dendropsophus leucophylata*, *Oloolygon rubra* and *Adelphobates quinquevittatus*. Moreover, in the study by Gascon and Pereira (1993), *Adenomera andreae* is most

likely *Adenomera gr. marmorata* that was also recorded in the present study. Gascon and Pereira (1993) made a mistake in identified *Dendrobates ventrimaculatus* as *D. quinquevittatus*, nowadays *Ranitomeya torero* Brown, Caldwell, Twomey, Melo-Sampaio and Souza, 2011.

Despite the different sampling efforts, environmental conditions and size of sampled areas when comparing this study with others in the Amazon (for example, 42 spp. in Manaus sensu Zimmerman and Rodrigues 1990; 34 spp. in Mamirauá Reserve sensu Bannerman 2001; 50 spp. in Ducke Reserve sensu Lima et al. 2006 and Menin et al. 2008; 43 spp. in lower Purus and Solimões rivers sensu Gordo 2003; 42 spp. in Jau National Park sensu Neckel-Oliveira and Gordo 2004), it is clear that the region of Urucu, with 54 species recorded in this study, presents a potentially high richness of anurans.

Although the results presented here have contributed significantly to the knowledge of anurans in the region of Urucu, we believe that further studies are still needed to know the real diversity of this fauna and the impacts of oil exploration in the region, all of which can be fundamental to the development of future conservation plans.

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APPENDIX 1: Voucher specimens

Aromobatidae: *Allobates femoralis*: MPEG 5196, MPEG 5198, MPEG 5217, MPEG 5243, MPEG 5256, MPEG 5282, MPEG 18265, MPEG 28416, MPEG 28417. *Allobates* sp.: MPEG 5136, MPEG 5161, MPEG 5219, MPEG 5221, MPEG 16807, MPEG 16827, MPEG 18232, MPEG 18233, MPEG 18234, MPEG 18235, MPEG 18236, MPEG 26355, MPEG 26356, MPEG 28358, MPEG 28359, MPEG 28377, MPEG 28415. **Bufonidae:** *Dendrophryniscus bokermanni*: MPEG 18261, MPEG 18262, MPEG 18263, MPEG 18264, MPEG 26359. *Rhaebo guttatus*: MPEG 5164, MPEG 16789, MPEG 16803. *Rhinella* gr. *margaritifera*: MPEG 5145, MPEG 5146, MPEG 5147, MPEG 5148, MPEG 5149, MPEG 5150, MPEG 5151, MPEG 5152, MPEG 5192, MPEG 5193, MPEG 5207, MPEG 5238, MPEG 5251, MPEG 5250, MPEG 5236, MPEG 5237, MPEG 5276, MPEG 5234, MPEG 5278, MPEG 5274, MPEG 5273, MPEG 5272, MPEG 5271, MPEG 5268, MPEG 5269, MPEG 5270, MPEG 5137, MPEG 5154, MPEG 16772, MPEG 16774, MPEG 16778, MPEG 16783, MPEG 16786, MPEG 16790, MPEG 16796, MPEG 16805, MPEG 16812, MPEG 16822, MPEG 18237, MPEG 18238, MPEG 18239, MPEG 18240, MPEG 18241, MPEG 18242, MPEG 18243, MPEG 18244, MPEG 18245, MPEG 18246, MPEG 18247, MPEG 22265, MPEG 22266, MPEG 26350, MPEG 26351, MPEG 26352, MPEG 26353, MPEG 26367, MPEG 28380, MPEG 28381, MPEG 28382, MPEG 28388, MPEG 28389, MPEG 28390, MPEG 28391, MPEG 28394, MPEG 28395, MPEG 28396, MPEG 28397, MPEG 28402. *Rhinella marina*: MPEG 5142, MPEG 5167, MPEG 16775, MPEG 16779, MPEG 16780, MPEG 16799, MPEG 16814, MPEG 16821, MPEG 16823, MPEG

18248, MPEG 18249, MPEG 26349, MPEG 28330, MPEG 28344, MPEG 28345, MPEG 28346. **Centrolenidae:** *Teratohyla midas*: MPEG 16801. **Dendrobatidae:** *Ameerega hahneli*: MPEG 5155. *Ameerega trivittata*: MPEG 5197, MPEG 5242, MPEG 5255, MPEG 16773, MPEG 16781, MPEG 16804, MPEG 22273, MPEG 26358, MPEG 26360, MPEG 26361, MPEG 26362, MPEG 28335, MPEG 28342, MPEG 28343, MPEG 28353, MPEG 28401, MPEG 28412, MPEG 28413, MPEG 28414. *Ranitomeya toraro*: MPEG 5259, MPEG 16776, MPEG 16785, MPEG 16791, MPEG 16794, MPEG 16797, MPEG 18276, MPEG 18277, MPEG 22269, MPEG 22270, MPEG 26357, MPEG 28372, MPEG 28373, MPEG 28392, MPEG 28393. **Eleutherodactylidae:** *Phyzelaphryne miriamae*: MPEG 5205, MPEG 5275. **Hylidae:** *Dendropsophus marmoratus*: MPEG 5182, MPEG 5285. *Dendropsophus minutus*: MPEG 5183. *Dendropsophus parviceps*: MPEG 28375. *Dendropsophus rhodopeplus*: MPEG 18256, MPEG 18257, MPEG 18258, MPEG 18259, MPEG 18260, MPEG 28369. *Dendropsophus sarayacuensis*: MPEG 5245, MPEG 5246. *Dendropsophus* sp.: MPEG 28428, MPEG 28429, MPEG 28430, MPEG 28431, MPEG 28432, MPEG 28433, MPEG 28434, MPEG 28435, MPEG 28436, MPEG 28437. *Hypsiboas boans*: MPEG 28352. *Hypsiboas calcaratus*: MPEG 5185. *Hypsiboas fasciatus*: MPEG 5264, MPEG 5266, MPEG 5263, MPEG 5265, MPEG 5184, MPEG 22267, MPEG 22268, MPEG 26363, MPEG 28384, MPEG 28385, MPEG 28386, MPEG 28387. *Hypsiboas geographicus*: MPEG 5187, MPEG 5188, MPEG 22271, MPEG 26364, MPEG 28374. *Hypsiboas lanciformis*: MPEG 5186, MPEG 16788, MPEG 16800, MPEG 18253, MPEG 26365, MPEG 28332, MPEG 28333, MPEG 28334, MPEG 28362. *Hypsiboas nympha*: MPEG 28403, MPEG 28404. *Osteocephalus buckleyi*: MPEG 5173, MPEG 5174, MPEG 18269, MPEG 26369, MPEG 26370, MPEG 28338. *Osteocephalus leprieurii*: MPEG 16782, MPEG 16798, MPEG 17684, MPEG 18254, MPEG 22272, MPEG 26366, MPEG 26367, MPEG 26374, MPEG 26385, MPEG 26386, MPEG 28329, MPEG 28337, MPEG 28339, MPEG 28340, MPEG 28341, MPEG 28410, MPEG 28411, MPEG 28418, MPEG 28419, MPEG 28420. *Osteocephalus oophagus*: MPEG 26272, MPEG 26371, MPEG 26373, MPEG 26378, MPEG 28370. *Osteocephalus taurinus*: MPEG 5171, MPEG 18255, MPEG 26375, MPEG 26376, MPEG 26377, MPEG 26379, MPEG 26380, MPEG 28371. *Phyllomedusa atelopoides*: MPEG 26381. *Phyllomedusa tarsius*: MPEG 28666. *Phyllomedusa tomoderna*: MPEG 5176, MPEG 26382, MPEG 26363, MPEG 28354,

MPEG 28364, MPEG 28365, MPEG 28366. *Phyllomedusa vaillantii*: MPEG 5175, MPEG 28331, MPEG 28368, MPEG 28399, MPEG 28400. *Scinax garbei*: MPEG 5247. *Scinax* cf. *x-signatus*: MPEG 5133, MPEG 5141, MPEG 5177, MPEG 5178, MPEG 5179, MPEG 5180, MPEG 5206, MPEG 5287, MPEG 5288, MPEG 5289, MPEG 16777, MPEG 16802, MPEG 16806, MPEG 22263, MPEG 22264, MPEG 28336, MPEG 28355, MPEG 28383. *Trachycephalus coriaceus*: MPEG 5286. **Leiuperidae:** *Engystomops freibergi*: MPEG 5157, MPEG, 5227, MPEG 5228, MPEG 5229, MPEG 5230, MPEG 5231, MPEG 5232, MPEG 5257, MPEG 5293, MPEG 18250, MPEG 18251, MPEG 18252, MPEG 26383. **Leptodactylidae:** *Adenomera* gr. *marmorata*: MPEG 5138, MPEG 5158, MPEG 5159, MPEG 5160, MPEG 5163, MPEG 5191, MPEG 5199, MPEG 5200, MPEG 5201, MPEG 5202, MPEG 5203, MPEG 5204, MPEG 5222, MPEG 5223, MPEG 5224, MPEG 5225, MPEG 5226, MPEG 5244, MPEG 5252, MPEG 5253, MPEG 5258, MPEG 5277, MPEG 5280, MPEG 5283, MPEG 16770, MPEG 16784, MPEG 16787, MPEG 16793, MPEG 16809, MPEG 16810, MPEG 16811, MPEG 16813, MPEG 16816, MPEG 16818, MPEG 16819, MPEG 16820, MPEG 16824, MPEG 16825, MPEG 16826, MPEG 18267, MPEG 18268, MPEG 18270, MPEG 18271, MPEG 18272, MPEG 18273, MPEG 18274, MPEG 18275, MPEG 25348, MPEG 26345, MPEG 26346, MPEG 26347, MPEG 28376, MPEG 28378, MPEG 28379, MPEG 28405, MPEG 28406, MPEG 28407, MPEG 28408, MPEG 28409. *Leptodactylus mystaceus*: MPEG 5190, MPEG 5241. *Leptodactylus pentadactylus*: MPEG 22261, MPEG 22262, MPEG 26368, MPEG 28347, MPEG 28348, MPEG 28349, MPEG 28350. *Leptodactylus petersii*: MPEG 5281. *Leptodactylus podicipinus*: MPEG 18266, MPEG 28360. *Leptodactylus rhodomystax*: MPEG 5290. *Leptodactylus stenoderma*: MPEG 5291. *Lithodytes lineatus*: MPEG 28438. **Microhylidae:** *Chiasmocleis avilapiresae*: MPEG 5169, MPEG 26354. *Chiasmocleis jimi*: MPEG 16771. *Chiasmocleis bassleri*: MPEG 5170, MPEG 5249, MPEG 16815, MPEG 28398. *Ctenophryne geayi*: MPEG 10670. **Pipidae:** *Pipa pipa*: MPEG 28351. **Strabomantidae:** *Oreobates quixensis*: MPEG 28427. *Pristimantis reichlei*: MPEG 5162, MPGE 5240, MPEG 16792, MPEG 16795, MPEG 28421, MPEG 28422, MPEG 28423, MPEG 28424, MPEG 28425, MPEG 28426. *Pristimantis* sp.1: MPEG 5239, MPEG 5248, MPEG 5262. *Pristimantis* sp.2: MPEG 28361. *Pristimantis* sp.3: MPEG 28356, MPEG 28357, MPEG 28384. *Pristimantis* sp.4: MPEG 16817.